I consequently found myself in the presence of several (at least two, perhaps three) species of animals of the same size, nearly allied in their organization, but very distinct in the vertebral arrangement of the neck, and all developed in the same medium. Anatomy was enriched by a new fact, and at the same time created a new difficulty in the classification of the fossil cuirassed Mammalia, which is already rather confused.

BIBLIOGRAPHICAL NOTICE.

British Conchology, Vol. III. *Marine Shells, comprising the remaining Conchifera, the Solenoconchia, and Gasteropoda as far as Littorina.* By John Gwyn Jeffreys, F.R.S., F.G.S., &c. London: Van Voorst. 1865.

Each succeeding year brings to us another volume of Mr. Jeffreys's new work on the British Mollusca, which is coming out with praiseworthy regularity. At the present rate of progress two more volumes will be required to complete the subject. We propose to continue the course which was adopted in noticing the preceding volumes, and compare the genera and species here described with those contained in Forbes and Hanley's 'History of the British Mollusca,' which, up to the present time, has been the standard authority on this portion of the marine zoology of our islands.

The following are the generic changes. *Sphenia* of Turton is merged in *Mya*, and *Cochlodesma* in *Thracia*. *Panopæa Norvegica* is regarded by our author as a *Saxicava* and not a *Panopæa*; but the latter genus is not excluded from our lists, since the little shell figured by Forbes and Hanley (pl. 6. figs. 1–3), but not named (*vide* vol. iv. p. 248), appears here with the name of *Panopæa plicata*, Montagu. The genus *Patella* is divided, and *P. pellucida* is placed in the genus *Helcion* of De Montfort: on the other hand, *Pilidium fulvum* falls into *Tectura* of Cuvier, a name adopted by Mr. Jeffreys instead of *Acmæa* of Eschscholtz. *Capulus*, De Montfort, supersedes *Pileopsis*, Lamarck; and, lastly, the genus *Cyclostrema* of Marryat is adopted in the family of the Trochidæ for the reception of three little shells,—*C. Culterianum*, Clark (=*Skenea Culteriana*, F. & H.); *C. nitens*, Philippi (=*Trochus pusillus*, F. & H.); and *C. serpuloides*, Montagu (=*Skenea divisa*, F. & H.).

The following species, which were admitted in the 'History of the British Mollusca,' are excluded in vol. iii. of 'British Conchology:'—*Corbula ovata*, *Teredo palmulata*, and *Trochus conulus*, as not being indigenous; *Skenea costulata*, as occurring only in a fossil state; *Pandora obtusa*, *Thracia villosiuscula*, *Corbula rosea*, *Saxicava arctica*, *Skenea lævis*, and *Patella athletica*, assigned respectively as varieties to *Pandora inæquivalvis* (*P. rostrata*, F. & H.); *Thracia papyracea*, Poli (*T. phaseolina*, F. & H.); *Corbula gibba* (*C. nucleus*, F. & H.); *Saxicava rugosa*; *Cyclostrema nitens*; and

Patella vulgata. In the genus *Littorina*, *L. fabalis* and *L. palliata* are referred to *Littorina obtusata* (*L. littoralis*, F. & H.), and *Littorina tenebrosa*, *L. saxatilis*, and *L. patula* are grouped, as Forbes and Hanley suggested they probably should be, under *L. rudis*.

Several Mollusca of much interest are added to the British fauna in the present volume.

Neæra rostrata, Spengler, a form which ranges from the Ægean and Mediterranean seas to the coasts of Norway and Sweden, is admitted on account of a single right valve, dredged in seventy-six fathoms forty miles from the east coast of Shetland.

Teredo pedicellata, Quatrefages, inhabits fir and oak used in submarine and fixed woodwork in the Channel Islands.

Lepeta cæca, Müller. A single specimen has been dredged in the Shetland seas, and a second off the west coast of Scotland.

Trochus amabilis, Jeffreys. A very beautiful new species, discovered among "fine sand, mixed with gravel, in 85 to 95 fathoms, about twenty-five miles N.N.W. of Burra Firth Lighthouse, Unst. The area in which it occurs appears to be limited to a few square miles. I discovered this new and beautiful species in 1861, while in company with my friend Mr. Waller; and we obtained specimens again in 1864 by dredging on the same ground. Living together with it were *Limopsis aurita*, *Cylichna alba*, *Buccinopsis Dalei* var. *eburnea*, and other treasures. I do not know any other place, at home or abroad, where it has been found."

Trochus Duminyi, Requien. Found among shell-sand at Bundoran, in Donegal Bay. This is a Mediterranean species, and was first described as a fossil by Philippi, under the name of *Valvata? striata*. It was recorded as British by Mr. Jeffreys, in his "Additional Gleanings in British Conchology" in the 'Annals' of September 1859, as *Skenea striata*.

Although not prepared to acquiesce in all the changes which have now been enumerated, yet with the greater part of them we entirely agree, and shall only here call attention to two of the points in which we venture to entertain a different opinion from that which is maintained in the book before us.

We must enter a strong protest against the uniting of *Pandora obtusa* with its ally *P. inæquivalvis*. Mr. Jeffreys gives the following reasons for the course which he has adopted in treating the former as a variety of the latter species:—"The difference between the typical shell and the variety *obtusa* apparently arises from the nature of their respective habitats—the one being sublittoral, and the other belonging to deeper water. An intermediate form has been taken by Cailliaud on the coast of Brittany, and by M'Andrew at Corunna. On a superficial view, indeed, it would seem as if a valid distinction existed in the length from the beak to the front margin being always greater in *P. inæquivalvis* (or *rostrata*), and on the posterior side in *P. obtusa*; but this only shows that varieties, as well as species, have some character of their own. Such may be expected when the conditions of life vary. The extension of the posterior side in the typical form may be caused by the differ-

ence of locality. When the Littoral zone is sandy, the surface is apt to be disturbed by waves and occasional storms, so that the stratum may be of a greater or less thickness at one time than at another: now it is covered by a deposit of material thrown up by the sea; in a few days this cover may be stripped off. In order to prevent its tubes being choked by an accumulation of the imported material, the *Pandora* living between tide-marks gradually lengthens that end of its shell. The variety which inhabits deeper water is not exposed to fluctuations of this kind; it therefore does not require any such provision, and lies undisturbed in its level bed. This may explain the variation in the proportion of length and breadth which is exhibited by the two forms. The difference of thickness in the shells of *P. inæquivalvis* and its varieties also depends on habitation. I am also inclined to think that, with regard to every species living both in the Littoral and Coralline zones, the shell is thicker in the former than in the latter. Examples to illustrate this proposition occur in *Venus gallina* and its varieties *striatula* and *laminosa*, *Mactra solida* and its variety *elliptica*, *Trochus ziziphinus* and its small conical variety, *Buccinum undatum* and its variety *zetlandica*, and in many other species. Experiments made by Dr. Davy, Forchhammer, and Bischoff have proved that the quantity of carbonate of lime held in solution by sea-water, and from which shells are produced, is greater on the coast than in the ocean: it is derived from the land, and brought down to the sea by rivers and streams, the washings of rain, and the action of waves. This fact ought not to be lost sight in discriminating species from varieties, of which the comparative solidity and size are the sole or chief criteria."

Now, surely, there is a great deal assumed here. That convenient little word "*may*" holds a very important place in this argument; and Mr. Jeffreys supposes an instance of wonderfully rapid conformity to requirement when he urges that the posterior extremity of the shell may be lengthened in the course of a few days to prevent the tubes being choked by an accumulation of the shifting material of the sea-shore. We would suggest that the animal might crawl upwards out of the deepening sand somewhat more rapidly than the shell would be likely to grow, and, moreover, that it must not be forgotten that the size and form of the shell depend upon the size and form of the animal contained within it. Again, it is undoubtedly true that a species which has a considerable range in depth, will be frequently found to have its shell much more strongly developed in the Littoral and Laminarian zones than it is in greater depths of water; but this fact does not prove that a thin-shelled, deep-water member of a genus is specifically identical with a stronger-shelled form which invariably inhabits shallower water, and differs from it not only in respect to the substance of the shell, but in many other particulars of structure also; moreover we are not aware that the comparative tenuity of *P. obtusa* has ever been relied upon as of weight in maintaining its specific character. Forbes and Hanley clearly point out the characteristic differences of the two allied

species of the genus; and it appears to us that Mr. Jeffreys yields everything when he acknowledges "it would seem as if a valid distinction existed in the length from the beak to the front margin being always greater in *P. inæquivalvis*, and on the posterior side in *P. obtusa*;" for the point of difference here alluded to will be found to be constant and all-important. *In* P. obtusa, *the greatest diameter from the dorsal to the ventral margin is always situated towards the posterior extremity of the shell, whereas in* P. inæquivalvis *it is anterior, or in a line drawn from the beaks.* We have examined more than 600 specimens of *P. inæquivalvis* from Jersey, for the express purpose of finding intermediate gradations between that species and *P. obtusa*, but without meeting with any such specimens; and the more experience we have had of the two shells, the more firmly have we become convinced that differing, as they do, 1st, invariably in form, 2ndly, invariably in habits, and, 3rdly, in geographical distribution, *Pandora inæquivalvis* and *P. obtusa* cannot but be regarded as valid and distinct species.

By far the most interesting portion of the present volume is the graphic and full account of the ship-worm (Teredo), to the history of which the author devotes no less than forty-five pages. The details respecting this genus have evidently been drawn up with especial care, and must be read in their entirety to be appreciated. To attempt to give here partial extracts would be doing the author an injustice. Mr. Jeffreys describes only six species of the genus, whereas, in his "List of the British Species of Teredo," published in the 'Annals' of August 1860, no less than fifteen were admitted. On examining the reasons for this wide discrepancy, we find that *Teredo nana*. and *T. subericola* are now regarded as varieties of *T. megotara*, and that *T. bipinnata* of Turton is the same as *T. pennatifera* of Blainville—the former author having assigned in his description the valves of one species (*T. malleolus*) to the pallets of another (*T. pennatifera*). Again, *T. bipartita*, *T. fusticulus*, *T. spatha*, and *T. fimbriata* (*T. palmulata*, F. and H.) undoubtedly have no claim to be admitted into our fauna. The valves and pallets of these species have indeed been found in pieces of wood floating in our seas; but those woods have always been of extra-European origin—West-India cedar and mahogany—and the contained Teredines have never been met with alive, the animals having apparently perished in the cold waters of our seas.

We are, however, at a loss to understand upon what principle *T. malleolus* and *T. bipinnata* (*T. pennatifera*, Blainville) are admitted, while *T. excavata* and *T. cucullata* are excluded. These four species occur under precisely similar circumstances, and are frequently found associated together and living in the same pieces of European woods drifted to our shores. We cannot acquiesce in the statement that "the habits of the Teredo are littoral," and that "when they are met with far from land, the piece of wood which contains them has been accidentally detached and carried out to sea by some marine current." On the contrary, the four species just mentioned, though frequently met with in floating balks of timber, have never as yet, we believe, been found in fixed woodwork. They appear, like the

Lepadidæ, with which they so constantly live associated, to be essentially pelagic. The position which they invariably occupy in drift-wood proves that they have attacked the wood while it has been in a floating position; for as the wood floats in the water it will be found that the entrances to the tubes of the shipworms are always on the upper portion, where they are frequently brought into direct contact with the atmosphere, while the more deeply immersed angle of the log is hung with vast masses of barnacles. If the grounds on which those Teredines frequently found living in floating timber drifted to our shores by westerly winds are excluded from our fauna be valid and just, then, all we have to say is that Mr. Jeffreys has established a precedent which, if followed out in other branches of science, would lead us to refuse to admit into our fauna all occasional ornithological visitants, the *Ianthinæ*, *Salpa*, many oceanic Crustacea, *Physalia*, *Velella*, *Diphyes*, &c., and all the Lepadidæ except *Scalpellum vulgare*. We commend to Mr. Jeffreys's notice the following observations of Mr. Darwin upon the genus *Lepas*, which presents us with an exact parallelism to Teredo:—"The species abound over the Arctic, temperate and tropical parts of the Atlantic, Indian, and Pacific Oceans, and are always, or nearly always, attached to floating objects, dead or alive. The same species have enormous ranges; in proof of which I may mention that, of the six known species, five are found nearly all over the world, including the British coast, and the one not found on our shores (the *L. australis*) apparently inhabits the whole circumference of the Southern Ocean."

In conclusion, we will only add that the more we see of 'British Conchology,' the more do we recognize the value of the work both to conchologists and Tertiary palæontologists, and the more confidently are we able to commend it to our readers. And now, Mr. Jeffreys, we shall for the present wish you good-bye, looking forward with especial interest to the appearance of your next volume, and anxious to learn what you are going to do with those horribly tormenting *Odostomiæ*, over the study of which we poor conchologists have so often strained our eyes, and racked our brains, and scratched our heads in the agonies of perplexed doubt! We will not say, "Woodman, spare *that* tree," but rather, "Don't be afraid of the pruning-knife."

MISCELLANEOUS.

Capture of Muscicapa parva *at Scilly.*

To Dr. J. E. Gray, F.R.S. &c.

Sir,—It may be interesting to you to know that another example of *Muscicapa parva*, very nearly in the same state of plumage as its predecessor at Scilly, was captured on Sunday week, at Trescoe Isle, Scilly. The variation in its plumage consists in the scapularies and wing-coverts being more decidedly bordered with rufous. This, I think, shows it to be a bird of the year. I expect it breeds in Britain.

Yours obediently,

Penzance, Nov. 14, 1865. Edward Hearle Rodd.